Application No.: 10/782,988

Office Action Dated: February 13, 2007

PATENT
REPLY FILED UNDER EXPEDITED
PROCEDURE PURSUANT TO
37 CFR § 1.116

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A method for reading a <u>changed</u> data page, said method comprising:

making a change to the changing a data page; to generate a

generating the changed data page in response to the change;

storing data associated with the change in a transaction log buffer;

marking a durability indicator associated with the changed data page that to

indicate[[s]] that the changed data page <u>transaction log buffer</u> has yet to be written <u>flushed</u> to a persistent data store;

storing data associated with the change in a transaction log buffer;

determining whether the changed data page is marked; and

flushing the transaction log buffer to the persistent data store, based on the durability indicator, prior to the changed data page being read.

2. (Currently amended) The method of claim 1 further comprising:

unmarking the durability indicator changed data page when the transaction log buffer is flushed.

3. (Currently amended) The method of claim 2 wherein flushing the transaction log

buffer occurs when the durability indicator changed data page is marked, and wherein said

method further comprises reading an unmarked data page as part of a read operation that uses

data that has been stored in the persistent data store, without first flushing said transaction log

buffer.

4. (Currently amended) The method of claim 1 wherein marking the durability indicator

changed data page comprises writing a value of a bit associated with said changed data page.

5. (Currently amended) The method of claim 4 wherein the bit is stored in said <u>changed</u>

data page.

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- 6. (Original) The method of claim 4 wherein the bit is stored in a reference table.
- 7. (Currently amended) The method of claim 1 wherein marking the durability indicator changed data page comprises recording, in a reference location associated with said changed data page, a copy of a log sequence number from said transaction log buffer and corresponding to the change to the data page.
- 8. (Currently amended) The method of claim 7 wherein said copy of the log sequence number is stored in said <u>changed</u> data page.
- 9. (Previously presented) The method of claim 7 wherein said copy of the log sequence number is stored in a reference table.
- 10. (Previously presented) The method of claim 7 wherein the copy of the log sequence number is used to identify a transaction in order to cause said transaction to effect the flushing of the transaction log buffer.
- 11. (Currently amended) A computer-readable medium having computer-readable instructions for reading a <u>changed</u> data page, said computer-readable instructions comprising instructions for:

making a change to the changing a data page; to generate a

generating the changed data page in response to the change;

storing data associated with the change in a transaction log buffer;

marking a durability indicator associated with the changed data page that to indicate[[s]] that the changed data page transaction log buffer has yet to be written flushed to a persistent data store;

storing data associated with the change in a transaction log buffer;

determining whether the changed data page is marked; and

flushing the transaction log buffer to the persistent data store, based on the durability indicator, prior to the changed data page being read by a read operation.

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12. (Currently amended) The computer-readable medium of claim 11 further comprising

instructions for:

unmarking the durability indicator changed data page when said transaction log buffer

is flushed.

13. (Currently amended) The computer-readable medium of claim 12 wherein flushing

the transaction log buffer occurs when the durability indicator changed data page is marked,

and wherein a read operation that uses data that has been stored in the persistent data store

can read an unmarked data page without first flushing said transaction log buffer.

14. (Currently amended) The computer-readable medium of claim 11 wherein the

instructions for marking the durability indicator changed data page further comprises

instructions for changing a value of a bit associated with said changed data page.

15. (Currently amended) The computer-readable medium of claim 14 further comprising

instructions for the bit to be stored in said changed data page.

16. (Previously presented) The computer-readable medium of claim 14 further

comprising instructions for the bit to be stored in a reference table.

17. (Currently amended) The computer-readable medium of claim 11 wherein the

instructions for marking the durability indicator changed data page further comprises

instructions for recording a copy of a log sequence number, from said transaction log buffer

and corresponding to the change to the data page, in a reference location associated with said

changed data page.

18. (Currently amended) The computer-readable medium of claim 17 further comprising

instructions for said copy of the log sequence number to be stored in said changed data page.

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19. (Previously presented) The computer-readable medium of claim 17 further comprising instructions for said copy of the log sequence number to be stored in a reference table.

- 20. (Previously presented) The computer-readable medium of claim 17 further comprising instructions for the copy of the log sequence number to be used to identify a transaction in order to cause said transaction to effect the flushing of the transaction log buffer.
- 21. (Currently amended) A data page reading system, said system comprising: a plurality of data pages;
 - a plurality of transaction logs associated with each of said plurality of data pages;
- a <u>first</u> subsystem that <u>makes a changes</u> to one of the <u>plurality of data pages</u>, to generates a changed data page <u>in response to the change</u>, and marks a <u>durability indicator associated with the changed data page that to indicate[[s]] that the <u>changed data page associated transaction log</u> has yet to be <u>written flushed</u> to a persistent data store, <u>wherein data associated with the change being is</u> stored in the associated transaction log;</u>

a second subsystem that determines whether the changed data page is marked; and a durability third subsystem that flushes the associated transaction log to [[a]] the persistent data store, based on the durability indicator, prior to the changed data page being read by a read operation.

22. (Canceled)

23. (Currently amended) The system of claim 21 further comprising a read fourth subsystem whereby that performs said read operation, when executing the process of reading said data page, wherein the second subsystem checks whether said durability indicator changed data page has been marked and, (a) if so, the third subsystem flushes [[a]] the transaction log associated with said changed data page[[,]] and unmarks said durability indicator changed data page, and the fourth subsystem reads a set of data from said changed

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data page, and, (b) if not, the fourth subsystem reads the set of data from said data page without first flushing said transaction log associated with said changed data page.

24. (Currently amended) The system of claim 23 wherein the <u>plurality of data pages each</u> comprise[[s]] a bit <u>associated with said data page</u> that is changed when said <u>respective</u> data page is modified by a transaction.

- 25. (Currently amended) The system of claim 24 wherein the each bit is stored in said respective data page.
- 26. (Currently amended) The system of claim 24 wherein the each bit is stored in a reference table.
- 27. (Currently amended) The system of claim 23 further comprising a marking fifth subsystem which records a copy of a log sequence number, from said transaction log and corresponding to said modification of said data page by a transaction, in a reference location associated with said data page when said durability indicator changed data page is marked.
- 28. (Currently amended) The system of claim 27 wherein marking the fifth subsystem uses the copy of the log sequence number to identify the transaction in order to cause said transaction to effect flushing of said transaction log associated with said changed data page and unmarking said durability indicator changed data page when said data page associated transaction log is flushed.